

APPLICATION FOR UNITED STATES LETTERS PATENT

of

Thomas S. Neal
858 Hyde Avenue
Cupertino, CA 95014

John Norman
1450 Bing Drive
San Jose, CA 95129-4705

Guillermo Andres
5132 Orsini Ct.
Pleasanton, CA 94588

Ray Gradwohl
17790 McKinnon Drive
Saratoga, CA 95070

for

**COUPLER FOR MOUNTING A DEVICE TO ANOTHER DEVICE,
AND RELATED SYSTEM AND METHOD**


IP Administration
Legal Department, M/S 35
HEWLETT-PACKARD COMPANY
P.O. Box 272400
Fort Collins, CO 80527-2400

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COUPLER FOR MOUNTING A DEVICE TO ANOTHER DEVICE, AND RELATED SYSTEM AND METHOD

BACKGROUND

[1] Many computer systems include processing circuitry for performing
5 various computer functions such as receiving and generating data and executing
programs to perform specific tasks. These computer systems also often include one
or more peripheral devices that the processing circuitry may read data from, write
data to, or otherwise control to enhance and/or expand the function of the processing
10 circuitry. Examples of peripheral devices include a wireless receiver to allow the
processing circuitry to read data generated by a mouse and/or keyboard, a wireless
transmitter to allow the circuitry to write data to a printer and/or a personal data
assistant, a memory card reader to allow the circuitry to read data from a portable
memory card, and a connector module, such as a network hub, to allow the
processing circuitry to communicate with another computer system.

15 [2] FIG. 1 is a perspective view of a computer system 10 that includes a
housing 12 for protecting the processing circuitry (not shown) disposed inside the
housing, and two peripheral devices 14 and 16 (here a memory card reader and a
wireless receiver). Cables 18 and 20 couple the reader 14 and receiver 16,
respectively, to an interface 22 so that the processing circuitry can read data from
20 the devices. Each peripheral device 14 and 16 is typically placed on top of the
housing 12 or some other surface (not shown) located close to the interface 22 when
coupled to the interface to reduce the length of the cables 18 and 20. By reducing
the length of the cables, one can reduce the risk that the cables will get snagged, by
one's arm or some other item, and pulled, which can damage the devices, interface,
25 cables and/or processing circuitry.

[3] Unfortunately, locating more than two peripheral devices on top of the
housing 12 can be problematic. The area on top of the housing 12 is often limited.
Because each peripheral device is typically placed directly on the housing 12, the
number of peripheral devices one can set on the housing is often limited to two.

30 Furthermore, the cables 18 and 20 coupling the devices to the interface 22 occupy a

portion of the area on top of the housing **12** and, thus, further reduce the area available to support additional devices.

[4] Stacking the peripheral devices **14** and **16** on top of each other may be a solution to this problem, but stacking the devices can also be problematic.

5 Stacking the devices **14** and **16** typically includes placing a first device on the housing, and then placing a second device on the first device. If a third device is included in the system, the additional device may be placed on top of the second device, and so on for additional devices. Unfortunately, when the devices are stacked on top of each other, one can accidentally contact and knock the devices
10 above the first device, and especially the top device, off the stack with one's arm, hand or some other object and; thus, damage the device, the other devices in the stack, the cables and/or the interface **22**.

SUMMARY

[5] In one aspect of the invention, a coupler for releasably mounting a
15 computer peripheral device to another device includes a first portion operable to engage the computer peripheral device, and a second portion operable to engage the other device. In another aspect of the invention, a computer peripheral device includes a connector operable to mount the computer peripheral device to another device. With the coupler, the computer peripheral device may more securely support
20 the other device as compared to one placing the other device on top of the computer peripheral device as discussed in the background section. Similarly, with the connector, the computer peripheral device may more securely support the other device. Furthermore, with the coupler, connector, or both, one may generate a stack including three or more peripheral devices of a computer system by mounting each
25 additional device to an adjacent device in the stack. Thus, a housing of the computer system may support more peripheral devices.

BRIEF DESCRIPTION OF THE FIGURES

[6] **FIG. 1** is a perspective view of a computer system including two peripheral devices, each placed on top of a housing of the system.

[7] **FIG. 2** is a perspective view of a computer system incorporating a coupler that mounts a peripheral device to another peripheral device according to an embodiment of the invention.

[8] **FIG. 3** is an exploded, perspective view of the coupler and peripheral devices in **FIG. 2** according to an embodiment of the invention.

[9] **FIG. 4** is an exploded, perspective view of two peripheral devices, one of which incorporates a connector according to another embodiment of the invention.

DETAILED DESCRIPTION

[10] **FIG. 2** is a perspective view of a computer system **30** incorporating a coupler **32** according to an embodiment of the invention. The coupler **32** releasably mounts a first peripheral device **34**, for example a wireless receiver, to a second peripheral device **36**, for example a memory card reader, and includes a body **38** (discussed in greater detail in conjunction with **FIG. 3**), and a coupling element (not shown but discussed in greater detail in conjunction with **FIG. 3**). The coupling element releasably fastens the body **38** to the first peripheral device **34** and to the second peripheral device **36** to mount the second device to the first device. The body **38** may include a handle **40** (discussed in greater detail in conjunction with **FIG. 3**) for grasping the coupler **32** to release the coupling element from the first peripheral device **34** or the second peripheral device **36**, and thus dismount the second device from the first device.

[11] The computer system **30** also includes processing circuitry (not shown) for performing various computer functions such as receiving and generating data and executing programs to perform specific tasks, and a housing **44** to protect

the circuitry disposed in the housing. Two cables **46** and **48** couple the first and second peripheral devices **34** and **36**, respectively, to an interface **50** so that the processing circuitry can read data from, write data to, and otherwise control the devices.

5 **[12]** With the coupler **32**, one may releasably mount the second device **36**
to the first device **34** to more securely support the second device with the first
device, as compared to placing the second device on the first device as discussed
above in conjunction with **FIG. 1**. Furthermore, with an additional coupler (not
shown), one may mount another peripheral device (not shown) to the second device
10 **36**. Consequently, the area of the computer system's housing **44** that is occupied by
the peripheral devices **34** and **36**, and the additional device, is the same as the area
occupied by the first device **34**. Thus, the housing **44** may support more peripheral
devices.

15 **[13]** Other embodiments are contemplated. For example, two or more
couplers **32** may mount the second device **36** to the first device **34**. In another
example, a coupler **32** may mount the first device **34** to the computer system's
housing **44**. This may be desirable to more securely support the first device **34** with
the housing **44**, and thus further reduce the risk that the first and second devices will
be knocked off the housing and damaged. In yet another example, Velcro® (not
20 shown) may mount the second device **36** to the first device **34**. In yet another
example, a clamp (not shown) may mount the second device **36** to the first device **34**
by wrapping around the first and second devices.

[14] **FIG. 3** is an exploded perspective view of the coupler **32**, and the
peripheral devices **34** and **36** in **FIG. 2**.

25 **[15]** The coupler **32** includes a body **38**, and coupling element **52** to
releasably fasten the body to the peripheral devices **34** and **36**. In one embodiment,
the coupling element **52** includes a first portion **49** which may be inserted into a
connector **54** (here a receptacle) of the first device **34**, and a second portion **51**
which may be inserted into a connector **56** (here a receptacle) of the second device

36 to releasably fasten the body **38** to the devices. The coupling element **52** may include a first flange **58** that has a thickness **60** slightly larger than the height **62** of the receptacle **54**, and is sized to be insertable into the receptacle. With the first flange's thickness **60** slightly larger than the receptacle's height **62**, the first flange **58** may be wedged into the receptacle **54** to releasably fasten the first device **34** to the body **38**. Thus, friction between the first flange **58** and the receptacle's walls **64** can secure the first device **34** to the coupler **32**. Likewise, the coupling element **52** may include a second flange **66** that has a thickness **68** slightly larger than the height **70** of the receptacle **56**, and is sized to be insertable into the receptacle. Furthermore, the second flange **66** may be wedged into the receptacle **56** to releasably fasten the second device **36** to the body **38**, and thus friction between the second flange **66** and the receptacle's walls **72** can secure the second device to the coupler **32**.

[16] Other embodiments are contemplated. For example, the coupling element **52** may include a receptacle sized to receive a flange (not shown) of the device **54** or **56**. In another example, the coupling element **52** may include a hook (not shown) insertable into a cavity of a receptacle (not shown) of the device **54** or **56** to secure the device to the coupler **32**. In yet another example, the coupling element **52** may be inserted into a receptacle (not shown) of the device **54** or **56** and secured to a device with Velcro®.

[17] Still referring to **FIG. 3**, in operation, one may mount the second device **36** to the first device **34** by releasably fastening the first device to the coupler **32** and releasably fastening the second device **36** to the coupler. In one embodiment (assuming the coupler **32** is not fastened to the first or second devices **34** and **36**), one may first insert the first flange **58** into the first device's receptacle **54** to releasably fasten the device to the coupler **32**. Then, one may insert the second flange **66** into the second device's receptacle **56** to releasably fasten the device to the coupler **32**. When the devices are mounted together, the devices **34** and **36** may contact each other to help stabilize the mounting of the second device **36** to the first device **34**.

[18] Still referring to **FIG. 3**, the second device **36** includes a second connector **73** (here a receptacle) that can receive another coupler (not shown) to releasably mount a third device (not shown) to the second device. Likewise, the third device may also include a second connector to releasably mount a fourth device with yet another coupler. Thus, the housing **44 (FIG. 2)** may support more than two peripheral devices.

[19] Still referring to **FIG. 3**, the coupler **32** may be made from any desirable material using any desired manufacturing process. For example, in one embodiment the coupler **32** may be made of conventional plastic, such as Acrylonitrile Butadiene Styrene (ABS), and cast as one piece from a mold. Thus, the coupling element **52** and handle **40** may be an integral part of the formed coupler **32**. In other embodiments, the coupling element **52** and handle **40** may be fastened to the body **38** using any desired means, such as gluing with an adhesive.

[20] Still referring to **FIG. 3**, the coupling element **52** may be shaped as desired to releasably fasten the body **38** to the first device **34** and the second device **36**. For example, in one embodiment, the first flange **58** extends from a bottom **74** of the body **38** and substantially perpendicular (90°) to the body. And the second flange **66** extends from a top **76** of the body **38** and substantially perpendicular to the body **38**. Thus, the coupler **32** has a cross-section in the shape of an "I".

[21] Other embodiments are contemplated. For example, the first and second flanges **58** and **66** may extend from the bottom **74** and top **76**, respectively, at angles other than 90°, such as 45° or 60°. In another example, the first and second flanges **58** and **66** may extend from other portions of the body **38**, such as the middle. In yet another example, the first flange **58** may include two or more sub-flanges (not shown) each extending from a respective portion of the bottom **74**, and the second flange **66** may include two or more sub-flanges (not shown) each extending from a respective portion of the top **76**. For example, the first flange **58** may include a sub-flange extending from a portion of the bottom **74** that is located adjacent the handle **40**, and another sub-flange extending from a portion of the bottom that is located at an end of the coupler **32** opposite to the handle **40**. In such

an embodiment, the bottom **74** may include a portion that does not have a sub-flange extending from it. The second flange **66** may be similarly configured.

[22] Still referring to **FIG. 3**, the body **38** may include the handle **40** for grasping the coupler **32** to insert or remove the coupling element from the first device **34** and second device **36**. The handle **40** may be shaped as desired and may include a hole **78** for engaging the coupler **32** with an object, such as one's finger, a screwdriver or a rod with a hook on its end, to help insert and remove the coupling element **52** from the devices **34** and **36**. For example, in one embodiment, the handle **40** has a rectangular shape and the hole **78** extends through the handle. By extending through the handle **40**, the hole **78** allows one to insert an object through the handle **40** and hook the handle to obtain a secure grip when removing the coupling element **52** from the first device **34** or second device **36**.

[23] Other embodiments are contemplated. For example, the handle **40** may include a flange (not shown) that one may hook with one's finger or other object. In another example, the handle **40** may have another shape, such as curvilinear, elliptic, or spherical.

[24] **FIG. 4** is an exploded, perspective view of a connector **80** and peripheral devices **82** and **84** according to another embodiment of the invention. In this embodiment, the connector **80** includes a coupling element **86**, and the connector and housing **88** of the first device **82** are cast as one piece from a mold. Thus, the coupling element **86** may be an integral part of the formed housing **88**. To releasably mount the second device **84** to the first device **82**, one inserts the coupling element **86** into the receptacle **90** to wedge the flange **92** between the receptacle's walls **94**.

[25] The preceding discussion is presented to enable one skilled in the art to make and use the invention. Various modifications to the disclosed embodiments will be readily apparent to those skilled in the art, and the generic principles herein may be applied to other embodiments and applications without departing from the spirit and scope of the present invention. Thus, the present invention is not intended

to be limited to the embodiments shown, but is to be accorded the widest scope consistent with the principles and features disclosed herein.